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Which employers sponsor defined contribution plans? Evidence from linked employer-employee administrative records*

Michael Gideon, Ph.D.
U.S. Census Bureau

Joshua Mitchell, Ph.D.
U.S. Census Bureau

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ABSTRACT

This paper explores an innovative approach to measuring defined contribution (DC) retirement plan sponsorship using tax administrative records. Using this measure, we estimate lower employer sponsorship rates yet higher worker coverage than estimates from establishment and household surveys. We examine characteristics of this measure by linking it to employer-level data from the Census Bureau's Business Register, plan-level data from Form 5500s filed annually with the Internal Revenue Service (IRS), and household-level data from the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) and the American Community Survey (ACS).

Using universe administrative records we find that in 2012, 79 percent of all wage and salary employees work for an employer who sponsors a defined contribution (D.C.) plan. Of these workers, we observe that 41 percent made a contribution to a D.C. plan. This works out to an overall measured participation rate in D.C. plans of 32 percent. We also document considerable heterogeneity in sponsorship across employer size, average annual salaries, and industry sector.

Using linked survey-administrative record data we find that among private sector wage and salary workers age 25-64, only 53 percent report that they work for an employer that offers *any* retirement plan (Defined Benefit or D.C.), while the administrative records indicate a D.C. offer rate of 75 percent. Among these workers, 44 percent report that they participated in a retirement plan, while the administrative records indicate a participation rate of 39 percent.

However, we emphasize that the currently available administrative records (1) cannot be used to measure defined benefit participation, (2) can only be used to measure contributions to traditional (non-Roth) accounts and (3) do not measure D.C. plans where employers make contributions on behalf of employees even in the absence of an employee contribution. Thus, actual participation rates in *any* retirement plan are likely larger than we are able to observe at this time. Actual sponsorship rates may also be somewhat higher. In addition, some employees who work for an employer who offers retirement benefits may not themselves be eligible to participate in the plan. We also emphasize that more information about individual circumstances is required to draw firm conclusions about savings adequacy and retirement preparation.

1. Introduction

Accurate measurement of employer-provided pension coverage is critically important for understanding how well Americans are prepared for retirement and for considering potential policy reforms to the retirement system. Yet research in the U.S. has been constrained by data limitations. In this paper, we develop an innovative approach to measuring defined contribution (DC) pension plan coverage and participation using tax administrative records. We examine characteristics of this measure by linking it to employer-level data from the Census Bureau's Business Register, plan-level data from Form 5500s filed annually with the Internal Revenue Service (IRS), and household-level data from the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) and the American Community Survey (ACS). We present our methodology and results using data from 2012.

Using W-2 tax records for the U.S. workforce, we identify firms that sponsor DC plans through the existence of tax-deferred retirement contributions by *any* employee of the firm in a given year. According to this measure, 13.7 percent of employers sponsor plans and 71.2 percent of jobs are at firms sponsoring plans. These sponsorship rates vary substantially by firm size and average employee wages. We also link the new employer-level measure to the Business Register, allowing us to identify heterogeneity in sponsorship and participation rates and relate it to a rich set of firm characteristics including industry and legal form of organization.

A potential limitation of this methodology is that it does not address defined benefit (DB) pensions and provides little information about characteristics of plans identified in the W-2 records. To investigate this issue, we further link the W-2 records to the Form 5500 data and estimate coverage rates across both DC and DB pension plans, as well as the presence of a DC autoenrollment plan.

Because few firms offer only DB plans, our measure of DC coverage using W-2s based measure of DC sponsorship roughly approximates overall (DB and DC) retirement plan coverage. This analysis also illustrates the importance of using the Business Register for firms that use multiple EINs.

To underscore the importance of our methodology, we use the CPS ASEC linked to W-2 records to document substantial differences between the W-2 based measure and survey self-reported pension plan coverage and participation. Workers underreport employer sponsorship of DC plans by roughly 20 percent. These workers are either unaware that their employers offer pension plans, or misunderstand the survey question. This, in turn, leads to estimates of take-up rates that are substantially larger than what we find based on W-2 coverage and participation.

We were also interested in examining coverage rates across various demographic groups within the U.S. To do this, we use individual-level data from the American Community Survey (ACS) linked to the W-2 records, and we produce nationwide estimates of retirement plan coverage and participation rates for various demographic sub-groups. We find large differences in participation and contributions across education and race groups, even after controlling for income.

2. Background

2.1 Prior Studies of Pension Plans

There is now convincing evidence that DC plan sponsors can change participant behavior using automatic enrollment, default contributions and match rates (Papke, 1995). Chetty et al. (2014) argue that roughly 15 percent of Danish workers are “active” rather than “passive” savers, meaning they change their DC contributions when there is a default contribution level that diverges from their optimal level.

In light of these findings, policymakers are increasingly focused on incentivizing firms to sponsor plans and provide more generous plan characteristics. For example, the White House budget for 2017 includes provisions designed to “make it easier for employers to create pooled 401(k) plans to lower cost and burden.” Other components of the budget aim to increase savings rates at firms already offering DC plans, specifically to “provide tax cuts for businesses that choose to offer more generous employer plans or switch to autoenrollment” (The White House, 2016).

Despite firms playing a critical role in shaping household retirement savings, and the increasing focus in policy discussions, little is known about firm-level decisions regarding sponsorship and plan design. Researchers have offered explanations for why employers offer pensions to their workers, but there is no consensus about which factors are most important. Previous literature focuses on how the primary function of pensions is to bond workers to their employers (Allen, Clark, and McDermed 1993; Ippolito 1991). Some research focuses on supply-side factors influencing whether a firm offers a plan, or whether to offer a DC or defined-benefit (DB) plan (Aaronson and Coronado, 2005; Dumann, 2008), and more recent work has investigated whether Danish firms tailor pension plans to their employees' saving preferences (Fadlon et al. (2016).

2.2 Data on defined contribution sponsorship and participation

In the U.S., the most credible research on worker participation decisions comes from responses to experimental and quasi-experimental variation in plan characteristics. These studies use proprietary plan-level data from plan sponsors (Nessmith, Utkus and Young, 2007; VanDerhei, 2010) and data from individual firms (Choi et al. 2004; Madrian and Shea 2001) to exploit within-firm variation over time. Generalizing these findings to a heterogeneous population is not possible. That would require either population-level data or a representative set of firms and workers.

Plan-level data from Form 5500 filings provides information about specific plans, but has several shortcomings when studying firm sponsorship, individual coverage and individual participation. Form 5500 data does not have information about non-sponsors. Second, some sponsors—namely, public sector and some smaller SEP and SIMPLE plan sponsors—are not required to file Form 5500. Another limitation is that prior to 2015, Form 5500 did not collect information on which employers participated in Multiemployer and Multiple Employer plans.

The National Compensation Survey (NCS) from the Bureau of Labor Statistics (BLS) contains information about establishments and their specific plans, but lacks information about the characteristics of workers covered by these plans. The relatively small sample size also limits researchers' ability to study small firms, as we discuss later in this paper.

Household surveys such as the Current Population Survey (CPS), Survey of Income and Program Participation (SIPP), and the Health and Retirement Study (HRS) collect data from individuals including demographic characteristics and worker self-reports about their employer-sponsored retirement plans. However, workers' imperfect knowledge about their plans (Mitchell, 1988; Gustman, Steinmeier, and Tabatabai, 2009), high rates of survey misreporting (Dushi and Iams, 2010), and increasing survey non-response rates (Meyer and Sullivan, 2015) present challenges when analyzing coverage and take-up. In particular, it seems plausible that workers underreport coverage in plans for which they do not participate and unobservable characteristics affecting plan knowledge about coverage could bias results concerning take-up. Workers might not know about Employee Retirement Income Security Act (ERISA) rules concerning non-discrimination, and, therefore, do not participate because they assume they are not covered under their employer's plan. On the other hand, workers who do not want to participate in a pension have little incentive to know about their employer's plan sponsorship.

Estimates of nationwide pension coverage vary substantially depending on the source of data, particularly whether the unit of analysis is the worker or the firm. Additionally, high-quality worker-level data are needed to understand participation. In the rest of this paper, we show how employer-employee linked data improve our ability to understand sponsorship, participation, and the potential impact of policies incentivizing firm sponsorship.

3. Data and methodology

In order to understand the determinants and consequences of employer-sponsorship, we draw upon an array of administrative records and develop a new approach to measuring firm sponsorship of DC plans. In this section, we describe in detail the data used for our study.

3.1 W-2 Records

Our primary data source is the universe of W-2 tax records obtained from the IRS. Each year, employers issue a W-2 to each of their employees. The W-2s contain information on annual earnings and employee contributions to employer-sponsored tax-deferred DC plans (e.g., 401(k)s, 403(b)s.). Contributions are based on amounts included in Box 12 of the W-2.

We define annual earnings for each job as the sum of Box 1 (wages, salaries, bonuses, etc.) and Box 12 amounts.

We measure participation, sponsorship and take-up using this information from the W-2s. We define individual participation as having positive tax-deferred DC contributions in the given year. A firm sponsors or offers a plan if *any* employee of the firm participates in a given year. The take-up rate is the share of employees at the firm who participate (among firms that offer a plan).

Throughout this paper, the basic unit of analysis is the job, which is defined as an employer-employee pair. In some cases, we aggregate up to the Employer Identification Number (EIN) to produce employer-level statistics. In other cases, we aggregate up from the job level to the worker level to measure retirement plan access rates of individuals. In each, we clearly identify the unit of analysis for our results. We use the EIN listed on the W-2 to link to other Census employer data sources. Employees are tracked based on their Protected Identification Key (PIK), which is a unique identifier developed by the Census Bureau that facilitates linking individuals to other individual-level datasets.¹

There are a few caveats with using W-2 records to define DC sponsorship and participation. While it would be worthwhile to examine differences between employer-sponsored plans and other sponsors—such as unions—we cannot distinguish between the two in W-2 records. Nevertheless, our goal is to measure DC plan coverage, and, therefore, it does not matter whether the plan is technically sponsored (and managed) by the employer versus other arrangements.² Another challenge is that we might not observe all DC plan contributions. It is possible (although uncommon) for a firm to offer DC plans without it showing up on any of their employee's W-2 returns. This would happen if employers contribute to plans without any employee contributions. After-tax contributions to Roth-designated accounts are also absent from our measure of contributions. While participation in Roth-designated employer-sponsored

¹ See Wagner and Layne (2014) for more information on the PIK assignment process.

² This distinction between employer-sponsored and union-sponsored plans is crucial when merging W2 records to information on plans in Form 5500. We address these issues in the section about the Form 5500 data.

plans has grown since their introduction in 2006, firms offering the Roth option typically do so in addition to (rather than instead of) tax-deferred accounts. In fact, the employer contribution to these accounts must be from pre-tax earnings, requiring employer and employee contributions to be maintained separately by plan sponsors.³ Ignoring Roth contributions could lead to underestimating participation rates. We do not expect this to impact our sponsorship rates for large firms, but could for small firms if all workers make after-tax rather than before-tax contributions.

3.2 Business Register

We explore differences in sponsorship and participation rates across firm characteristics by linking firms in the W-2s to the U.S. Census Bureau's Business Register (BR) using EINs.⁴ This database is designed to include all active establishments in the U.S.; it generates the sampling frame for establishment and firm-level surveys fielded by the Census Bureau. We focus on EINs that are in the BR records in 2012. EINs associated with non-employer firms are typically removed from the BR records. Single-unit firms typically have one EIN, whereas multi-unit firms may have more than one EIN. The BR has information about which EINs correspond to the same firm. For some analyses we combine EINs to construct a firm level measure.

3.3 Form 5500

Employers that sponsor employee benefits must file Form 5500 Annual Return/Report of Employee Benefit Plan ("Form 5500") for most benefit plans.⁵ Form 5500 helps companies satisfy annual reporting requirements under the 1974 Employee Retirement Income Security Act (ERISA) and under the Internal Revenue Code. Because employees are entitled to information about their pension benefits, these filings are generally public records. The

³ We are still investigating whether Form 5500 data has information to identify plans with a Roth option. Since the employer and employee contributions must be kept separate, it's possible they show up separately in Form 5500 records.

⁴ The Business Register (BR) contains all EINs who report payroll on IRS Form 941 or 943 in the current year. Almost all EINs in the W-2 records are also in the BR. Newly established and smaller firms are less likely to be in the BR. See Jarmin and Miranda (2003) for more information on the BR.

⁵ Smaller plans that satisfy certain criteria may instead file a Form 5500-SF, Short Form Annual Return/Report of Employee Benefit Plan ("Form 5500-SF").

return/report must be filed whether or not the plan is “tax-qualified,” benefits no longer accrue, contributions were not made this plan year, or contributions are no longer made. Sponsors of both DC and DB plans are required to file. Certain employers and types of plans are exempt from Form 5500 filing requirements. This includes all government plans, and some very small private sector plans, including certain Simplified Employee Pensions (SEPs), Savings Incentive Match Plan for Employees of Small Employers (SIMPLEs), and one-participant plans that file 5500-EZ (which is not treated as public info).

We use Form 5500 data from the 2012 Research File to enhance our understanding of estimates of DC plan sponsorship using W-2 records. While W-2 records measure DC coverage, we cannot measure overall pension coverage without information on Defined Benefit (DB) plans. The Form 5500 data also include plan characteristics that are absent in the W-2s.

4. Results

Table 1 shows DC plan coverage and take-up rates using our EIN-level measures constructed from the universe of W-2 records in 2012. Overall, there are 6.2 million firms in the 2012 W-2 records, and at least 13.7 percent of them sponsored DC plans. There were 218.9 million unique jobs, and at least 71.2 percent were at firms sponsoring DC plans. Among jobs at these firms, 33.6 percent made DC contributions.

[Insert Table 1]

Since people can have multiple jobs, we also calculate individual-level coverage and take-up rates. Among the 154.8 million unique individuals with a W-2, roughly 78.5 percent have one or more jobs with DC coverage. The take-up rate among these workers is 41.4 percent. Restricting to the 135.1 million workers with earnings equivalent to part time employment for half the year at the federal minimum wage (\$3,770 total annual earnings), coverage is 80.8 percent and take-up is 45.7 percent.⁶

⁶ This restriction is the same as the one used by Song et al. (2015). It excludes individuals who did not have a reasonably strong labor market attachment. We consider an individual to be full-time in a given year if summing

3.3.1 DC sponsorship and participation

Table 2 summarizes sponsorship rates and average participation rates across EIN size, where EIN size is defined as the total number of jobs occurring at some time during 2012. This measure of EIN size provides an upper bound on the number of employees at the EIN at a particular point in time.⁷ Panel A reports EIN-level estimates, whereas Panel B reports job-level estimates. In both panels the first column is the percentage of EINs (jobs) in each EIN size category. Most firms employ a small number of employees, yet most employees work at large firms. In 2012, over 70 percent of firms had fewer than 10 employees, and over 85 percent had fewer than 25 employees. While only one-third of one percent of firms had 1,000 or more employees, they accounted for approximately 50 percent of all jobs.

[Insert Table 2]

Columns two and three summarize sponsorship rates and average participation rates across firm size. We first look at the percentage of firms offering DC plans. Most firms do not offer DC plans, but most jobs are at (large) firms that offer plans. That is, only 13.7 percent of firms offer DC plans, but they accounts for 71.2 percent of the 218.9 million total jobs. While 72 percent of EINs with 100 or more employees offer DC plans, only 12 percent of EINs with 1-99 employees offer them.

Next, we compare average take-up rates among employees at firms that offer DC plans. The average participation rate across all firms is 45 percent. Take-up is 100 percent at single-employee firms, by construction. Take-up is over 50 percent for firms with 2-9 employees, and 41 percent for firms with 10-24 employees. The rate then plateaus as firm size increases, ranging from 32 and 37 percent for firms with at least 25 employees.

We also group firms by number of employees—1 to 9, 10 to 99, and 100 or more—and compute an EIN-level average of employee earnings. Firms are then grouped into ventiles by

across all jobs, he or she earns at least the equivalent of 40 hours per week for 13 weeks at the federal minimum wage (\$3,770 in 2012).

⁷ This measure of size is different from the measure used in most business statistics, which is typically based on employer reports of number of employees at a point in time.

the average of their employee's earnings. These ventiles are constructed within EIN size categories.⁸

Figure 1 (A) plots the mean offer rates by firm size categories and across average earnings ventiles. Sponsorship rates are highest for large firms with high wages. The sponsorship rate is over 98 percent for the top ventile of employee earnings among large firms. Small firms rarely offer DC plans, and sponsorship is concentrated among those in the top ventiles of average earnings. The figure shows heterogeneity in sponsorship within firm size categories. There are two interesting patterns. Sponsorship rates are higher for small firms in the top ventile of earnings (27 percent) than for large firms in the lowest ventile of earnings (14 percent). Within each category of firm size, sponsorship rates increase with mean employee earnings. These changes in sponsorship rates are at lower mean earnings among large firms than among small firms.

[Insert Figure 1]

A firm's likelihood of offering DC plans depends on the demand for these retirement benefits. It is only worthwhile for an employer to sponsor plans if they expect adequate participation among covered employees. These patterns of sponsorship across firm size and mean employee earnings could be explained by sponsorship decisions driven by expected number of participants. Individual participation rates increase with earnings—as we examine later in the paper—and therefore expected participation increases in the number of workers with high earnings.

Figure 1 (B) plots average participation rates for firms grouped by size and average employee earnings. As evident in Table 2, smaller firms have higher participation rates. For EINs with 100 or more employees, average participation rates are monotonically increasing in average total earnings. Average participation rates increase monotonically among large firms.

⁸ It would be clearer to use the same earnings thresholds to group EINs, regardless of EIN size. Results involving other cut-offs and using medians instead of means are subject to disclosure review.

Small and medium sized firms illustrate a different pattern. Participation rates are highest at the bottom and top end of the mean earnings distribution.⁹

3.3.2 Individual participation across income

These results suggest that sponsorship and participation rates vary across average firm earnings, particularly at small and medium-sized firms. To better understand these results, Table 3 shows how coverage and participation rates vary across worker earnings. Table 3 shows jobs with lower earnings are less likely to be covered by DC plans, at firms sponsoring DC plans. There are even larger differences in participation rates, and take-up rates vary substantially across income. Among workers earning between \$100,000 and \$150,000 in 2012, roughly 93 percent were at firms sponsoring DC plans and 76 percent made tax-deferred contributions, for a take-up rate of 82 percent. In contrast, among workers earning \$20,000 to \$30,000 in 2012, roughly 75 percent were covered by DC plans yet only 31 percent participated, for a take-up rate of 41 percent. Take-up rates were even lower at jobs earning less than \$20,000.

[Insert Table 3 here]

The relationship between take-up and income is consistent with sponsorship rates across firm size and average firm earnings. Firms need sufficient worker participation to offset costs associated with sponsoring DC plans, and sufficient worker participation only happens among highly paid employees. In light of the take-up rates across earnings, we would expect low sponsorship rates at small and medium firms that pay low wages, as illustrated in Figure 1.

3.3.3 Tenure requirements for DC coverage

We have thus far implicitly assumed all workers at firms sponsoring DC plans are eligible to participate. While nondiscrimination rules under ERISA constrain factors that limit employee eligibility, some requirements still exist. Our job-level estimates ignore these eligibility requirements. As a result, our job-level estimates are likely an upper-bound on coverage rates and a lower bound on participation rates (take-up).

⁹ There might be a mechanical relationship among small firms with lower mean wages. If firms with one employee are in the lowest ventiles of earnings, then the participation rate is mechanically high. For these firms the average participation rate is one, since this focuses on firms that offer DC plans.

Employees generally must be allowed to participate in a qualified retirement plan if they are at least 21 years old and have 1 year of service. There are some situations in which workers might not be eligible for employer contributions until 2 years of service. However, employees must be allowed to make elective deferral contributions after 1 year or less.¹⁰

To investigate the potential role of tenure requirements, we take the subset of firms in 2012 that have 1st year employees and “tenured” employees. In particular, we analyze EINs that exist for 2010, 2011 and 2012, with at least one first-year employee (in 2012) and at least one “tenured” employee, which we define as being in the W-2 records in 2010 or 2011 in addition to 2012.

Table 4 presents DC plan coverage rates for this subset of EINs. While 27.8 percent of these firms offer DC plans in 2012, only 9.3 percent of them have plans with first-year employees. This suggests that up to 18.5 percent of firms have tenure requirements, which is around two-thirds of firms offering DC plans. For firms with fewer than 10 employees, 8.2 percent offer DC plans, and only 1.1 have first year employees making contributions. In contrast, among firms with 100 or more employees, 74.2 percent offer plans, with 45.2 offering plans to first-year employees. The difference 39.9 percent is an estimate of the upper bound on the share of firms that have tenure requirements. These results are consistent with smaller firms being more likely to have tenure requirements. This could be explained by smaller firms having greater incentive to retain employees due to higher hiring and training costs per worker. However, there is also a mechanical relationship with larger firms being more likely to have both tenured and new employees, and also to have people contributing at all.

[Insert Table 4]

3.4 Heterogeneity in sponsorship by Business Register firm characteristics

Table 5 presents sponsorship rates and average participation across firm type and primary industry, highlighting substantial heterogeneity across firms. Employer-level measures

¹⁰ This requirement does not apply to certain “leased” employees.

of sponsorship and within-firm take-up rates are then linked to firm characteristics from the Business Register (BR). Categories of organization include non-profit, federal government, state/local government, corporation, sole proprietorship, and partnership. We group firms by industry using the North American Industry Classification System (NAICS) Sector codes.

[Insert Table 5]

Panel A presents offer rates and average participation rates across firm type. Not surprisingly, only 3.3 percent of sole proprietors have DC plans.¹¹

This number is larger than the number of one-employee firms with DC plans for a couple reasons. People who are hired as someone's lone employee are likely different than someone who is self-employed (sole proprietor).

The highest rates of sponsorship are among State/local governments, with over half offering DC plans, followed by non-profit organizations at 28 percent. Among for-profit businesses, 12.7 percent of S-corporations (S-corps) and 14.2 percent of Partnerships offer DC plans, compared to 19 percent of C-corporations (C-corps).¹² Compared to S-corps, C-corps tend to be older firms employing older tenured workers. S-corps and partnerships are both pass through entities—the company's profits show up as income on the individual returns.

The second column shows the average participation rates across firms. The average is over the percent participating at each firm. The lowest average participation rate is among non-profits and state/local governments, around 30 percent. State/local government workers are more likely to have access to defined benefit (DB) plans, as well, which could explain the lower average DC participation rates. The highest average participation rates are for S and C-corps, both around 49 percent. The average participation rate for sole proprietors is less than 100

¹¹Sole proprietor refers to a business that filed Schedule C, so it is not an incorporated business. While most do not have employees, they can. Businesses with employees have a lot of incentive to incorporate, because otherwise they face liability issues. If they incorporate, they may treat themselves as an employee.

¹² An S-corporation is a special type of corporation with the Subchapter S designation from the IRS. An important difference between C-corps and S-corps is that profits and losses from S-corps get passed on to personal tax returns and the businesses themselves are not taxed. There is also more limited liability protection for S-corps, and shareholders are not necessarily shielded from litigation from employees.

percent because sole proprietorship is about the ownership structure rather than the number of employees.

Panel B presents the same statistics but grouping firms by major industry sector. Utilities, management and public administration had the highest rates of DC plan sponsorship, whereas the lowest rates were in accommodation and food, and agriculture, forestry and fishing. Construction (9.5 percent) and transportation (10.7 percent) are also industries with many firms and offer rates that are below the overall mean of around 14 percent. Overall, industries with smaller firms and higher turnover have higher rates of DC sponsorship. Average participation rates are highest among utilities, management, and the finance and insurance sectors, all over 60 percent. Participation rates are also high for firms in the professional services (59 percent) and mining (56 percent) sectors. They are lowest in the accommodation and food sector (13 percent), which often employs many part-time and short-term workers.¹³

3.5 Coverage in pension plans using Form 5500

Next, we compare our estimates of DC coverage using W-2s with both DC and DB sponsorship in Form 5500 data. We focus on private sector EINs that are in the W-2s and the Business Register.¹⁴ Public sector jobs (federal, state and local, or Indian tribal governments) are excluded from the sample because they are exempt from Form 5500 filing requirements.

In Table 6, each EIN is categorized by whether it offered DC plans in W-2s (in 2012), and by whether it offered DC or DB plans according to Form 5500 (plan year ending date in calendar year 2012). An EIN offered a DC plan according to F5500 if there was one or more DC plans associated with the EIN with active participants. An EIN offered a DB plan if there was at least one DB plan with active participants.

¹³ These numbers are purely descriptive. There are known differences in firm size across industry, and we have shown sponsorship to increase in firm size. There are also differences in employee turnover across industry, which could impact participation rates, particularly at firms with tenure requirements for DC plan participation and vesting of employer contributions. Certain “leased” employees are also exempt from nondiscrimination rules under ERISA.

¹⁴ Most EINs in the F5500 data are associated with firms in the BR. We also checked whether EINs are associated with non-employer firms. A majority of EINs that are in Form 5500 but not in the BR are indeed non-employer firms. In future work we may incorporate these into the analysis, but for now we are only looking at EINs that link to the BR.

The first panel of Table 6—“Using EIN-level measures”—focuses on measures of sponsorship in W-2 records and Form 5500 at the EIN-level. The column for EINs gives the distribution (in percent) of EINs that do not offer DC or DB plans in W-2 or Form 5500 (84.4 percent), offer DC in W-2s with no corresponding F5500 plans (6.5 percent), and so forth.¹⁵ The column for “Jobs” is the distribution of jobs (in percent) at EINs that offer plans: e.g., 31.6 percent of jobs are at EINs that do not offer plans. A little over half of the jobs at EINs that offer DC in the W-2s (66.8 percent of jobs = $30.2 + 28.5 + 0.7 + 7.4$) have F5500 records for DC plans (35.9 = $28.5 + 7.4$). The percentages of jobs are computed by weighting each EIN by the number of distinct workers with W-2 records in 2012.

[Insert Table 6]

There are a few reasons why many EINs in the W-2s do not have records in F5500. Some very small plans (SEPs, SIMPLEs, and single-employee plans that file 5500-EZ) are exempt from F5500 reporting requirements. Information on such small plans is not treated as public information and therefore unavailable in the F5500 research files. There could be multiple EINs that are owned by the same business entity. That is, there could be two EINs used for payroll, but the F5500 filing is only reported using one of them. Alternatively, there could be a separate EIN for payroll and for F5500 filings. Finally, multiemployer and multiple employer plans were not required to report all EINs associated with these plans until 2015.

The issue of multiple EINs can be dealt with by leveraging the Census Bureau’s Business Register to link EINs that are associated with the same firm. We present numbers based on this linkage in Panel B.—“Using firm-level measures.” More specifically, W-2 and F5500 information collapsed to the firm level using the firm-level identification variables to group EINs for multi-unit firms. Here, a firm offers a DC plan in W-2s if any EIN associated with the firm offers a DC plan. Similarly, a firm offers a DC (or DB) plan in Form 5500 if any EIN associated with the firm sponsors at least one DC (or DB) plan in the Form 5500. The distribution of firms across categories of DC and DB plan coverage is similar to the distribution of EINs across these

¹⁵ For example, the row “DC(W2,5500); DB (5500)” means an EIN offered a DC plan in both W-2 and Form 5500, and offered a DB plan in Form 5500.

categories. The distribution of jobs across categories changes a lot. The percentage of “none” decreased slightly because there were EINs associated with the same firm that had DC contributions associated with one EIN and no DC contributions associated with another EIN, and yet neither EIN showed up in the Form 5500. The number of jobs at firms with DC plans according to both W-2s and F5500 increased from 28.5 percent to 38.1 percent, and the share with DC in the W-2 only decreased from 30.2 percent to 11.4 percent. This finding is itself important: most jobs with DC plans in the W-2 appear in Form 5500 records, after grouping EINs together using the BR infrastructure. Because of this, we can use 5500 data to assign plan characteristics to W-2 records, as we describe next in the context of autoenrollment. Nevertheless, the numbers that are from collapsing by the BR identification variables should be thought of as an upper bound on the jobs-level coverage rates.

Finally, we note that only 0.1 percent of EINs offer only DB plans, with roughly 0.1 percent of jobs at such firms. In terms of identifying whether or not an EIN offers pension plans (DB or DC), our W-2 based measure of DC sponsorship closely approximates overall pension coverage.

3.6 Autoenrollment

Another shortcoming of measuring DC sponsorship using W-2 records alone is that important plan characteristics are lacking. The Form 5500 data help address this issue, particularly in measuring employer adoption of autoenrollment.

We assign plan characteristics to firms using the Form 5500 and the Business Register infrastructure. Table 7 presents estimates of DC plan autoenrollment coverage. EINs are categorized into the following rows: (1) DC coverage in W-2s, autoenrollment according to F5500. (2) DC coverage in W-2s, no autoenrollment according to F5500. (3) DC coverage in W-2s, unknown autoenrollment because no active DC plans associated with this EIN in F5500 records. (4) No DC coverage in W-2s.

[Insert Table 7]

The columns are constructed similarly to Table 7. The first column is the distribution of EINs by what we know about DC plan autoenrollment. Only 0.4 percent of EINs offer DC (in W-2s) and use autoenrollment (according to Form 5500 filings), 6.9 percent of EINs offer DC in W-2s (and file Form 5500) but without autoenrollment, and 6.5 percent of EINs offer DC (in W-2s) but with unknown autoenrollment status because there is no corresponding Form 5500 record. As in Table 1, 86.2 percent of EINs do NOT offer DC plans in W-2s. (NOTE: to compare this with the preceeding table, this includes $84.4 + 1.6 + 0.1 + 0.1 = 86.2$). The column for "Jobs" is the distribution of jobs (in percent) at EINs that have autoenrollment (6.3 percent), do not have autoenrollment (29.5 percent), have unknown autoenrollment (30.9 percent) or have no DC coverage (33.2 percent).

The second panel—"Using firm-level measures"—uses all W-2 information from the EINs and Form 5500 information associated with the firm. If there are no Form 5500 records associated with the EIN, we append information on the active DC plans sponsored by other EINs associated with the same firm. Here, an EIN has DC autoenrollment if (a) a Form 5500 record exists for the EIN, with autoenrollment, (b) no Form 5500 record exists for the EIN, but there is least one active DC plan with autoenrollment at other EINs associated with the same firm. There is DC coverage with unknown autoenrollment if the EIN offers DC plan in W-2, but there is no active DC plan associated with the firm in Form 5500 records. There are still 86.2 percent of EINs with no DC coverage because this focuses on EINs offering DC in W-2s, rather than changing to firms offering DC in W-2s. The jobs-level distribution changes more than the EIN-level distribution. 13.4 percent of jobs are at firms with autoenrollment, and 41.8 percent are at firms that have have no plans with autoenrollment.

4. Comparing new measures to self-reported rates from CPS

To better understand the strengths and weaknesses of measuring DC plan sponsorship and individual participation using W-2 records, we directly compare these new measures to self-reported information from the Current Population Survey Annual Social and Economic

Supplement (CPS ASEC).¹⁶ Each year, between February and April, the CPS ASEC surveys approximately 75,000 households about their incomes and characteristics of their jobs held in previous calendar year, including two questions about employment-based retirement plans. First, those who worked in the previous calendar year are asked:

Other than Social Security did (ANY) employer or union that (name/you) worked for in (the previous calendar year) have a pension or other type of retirement plan for any of its employees?

If they answer “yes,” they are then asked:

(Were/Was) (name/you) included in that plan?

An affirmative response to the first question indicates working at an employer that sponsored a retirement plan and an affirmative response to both the first and second questions indicates participating in the plan. While these measures are regularly used to monitor retirement plan coverage and participation, Copeland (2015) shows that CPS ASEC coverage and participation rates diverge from patterns in the National Compensation Survey (NCS) and elsewhere, raising concerns about the efficacy of using CPS to study retirement plan coverage.¹⁷

The first CPS question is designed to identify coverage by DC or DB plans at any job during the year.¹⁸ In the W-2 records, the equivalent for DC coverage means having any job in the year at a firm that offers a plan. Similarly, in the W-2 records a worker participates if she makes DC contributions at any job in a given calendar year. Conceptually, this corresponds well with affirmative responses to both CPS questions, except DB is absent in the W-2s. Throughout, the CPS ASEC sample is restricted to individuals age 25 to 64 who report working at a wage and

¹⁶ In this version we are only comparing CPS responses to measures of DC coverage from the W-2 records. We plan to bring in Form 5500 information on DB coverage, but our ability to do so is limited by existing data use agreements.

¹⁷ While Copeland focuses mainly on changes that occur following the CPS ASEC redesign in 2014 (about 2013, he raises concerns about the efficacy of the questions overall.

¹⁸ There are considerable advantages to the CPS ASEC approach to measuring retirement plan coverage. Even if respondents do not know the specific type of plans offered, they can still answer that there exists some type of retirement plan connected to at least one of their jobs.

salary job in the previous calendar year (2012). We restrict our analyses to persons who we are able to link to administrative records via the PIK.¹⁹

Table 8 summarizes the agreement of 2013 CPS-ASEC and 2012 W-2 retirement plan information, for pension coverage and participation. Looking first at pension coverage, roughly 47 percent of respondents said they were covered by a plan and worked at firms offering plans according to the W-2s. Another 27.7 percent report that their employer does not offer any pension plans even though the W-2 records indicate otherwise. All CPS respondents at firms that offer DC plans in the W-2 records should have answered “yes” to the first question. Only 5.7 percent of respondents have a CPS measure indicating DC sponsorship, but without evidence of DC sponsorship according to the W-2s. Error rates are slightly larger for cases with imputed responses, although they are generally similar to the non-imputed cases.

[Insert Table 8]

Comparing participation rates in CPS and W-2s provides evidence of errors in CPS as well as limitations of using W-2 records. Overall, 72.6 percent of workers are consistent across the two measures—27.7 percent participate in both CPS and W-2, and 44.9 percent of workers participate in neither. There is also evidence of disagreement between participation reported in CPS and what is observed in W-2 records. This includes 11.6 percent of workers who have DC contributions in their W-2s but report in CPS that they do not participate.

There are also 15.8 percent of workers who report participating in CPS and do not have DC contributions in their W-2s. In these cases, we cannot conclude that CPS respondents misreport pension participation. First, using CPS we cannot distinguish between DB and DC sponsorship and participation. Since only employee DC contributions are recorded in the W-2 records, our administrative record measure may falsely label workers as not participating or not being offered a plan even though they have a DB plan, DC plan with only employer contributions, and/or a plan related to a union that is not recorded on the W-2. There is also

¹⁹ Throughout, we observe a close correspondence between the full CPS ASEC and the PIK Sample suggesting not much is lost by examining only responses for those that were assigned a PIK. Our discussion of the CPS ASEC will therefore focus on the PIK Sample.

ambiguity in the CPS wording, as it is unclear what it means to be “included” in a retirement plan. A worker could have a 401(k), but make no contribution to it in a particular year. Some CPS respondents may still consider themselves included in that 401(k) plan even if they are not currently contributing. Again, this should make the CPS measure larger than our W-2 measure. These discrepancies in the data could be explained by differences in what we measure in CPS and W-2s, and illustrate some limitations of using W-2s to measure participation.

Despite these conceptual differences that should lead to higher reported sponsorship and participation in CPS, our W-2 measure of sponsorship is considerably higher than the CPS measure, and our participation measure is only slightly lower than the CPS measure for private-sector workers. This suggests that “true” coverage might be even higher than our W-2 measure indicates. If we were able to include retirement plan information that we cannot observe in the W-2s, true participation rates might also be higher than the CPS suggests.

Table 9 compares CPS responses and W-2 measures of retirement plan coverage, participation, and take-up rates for 2012. We see important differences across demographic sub-groups, which are attributable solely to differences between the survey and administrative retirement plan measures.

For workers who reported that their longest job last year was a private sector, wage and salary position, the CPS sponsorship rate was 53 percent, while it was 75 percent in the W-2s. There was also a difference in offer rates for public sector workers--81 percent in the CPS ASEC versus 94 percent in the W-2s. These results are consistent with the idea that survey respondents are frequently unaware of what their employer offers particularly if they are not themselves participating in the plan.

Turning to participation rates, we observe a different pattern. For private-sector workers, the W-2 participation rate is a bit lower at 39 percent than the CPS rate of 44 percent. Because our W-2 offer rates are much higher and the participation rate is somewhat lower for the private sector, take-up rates as measured by the W-2s are also much lower—53 percent versus 83 percent.

For public-sector workers, the participation differences are more stark at 43 percent in the W-2s versus 74 percent in the CPS. This could be attributable to the lack of defined benefit information available in the W-2 records. The NCS demonstrates that almost all state and local workers have a retirement plan and that the CPS understates both offer and participation rates in the public sector. Therefore, we focus only on the private sector workers for the rest of the results.

The CPS suggests private sector sponsorship rates rise with age, from 47 percent, for those age 25 to 34, to 56 percent for those age 55 to 64. In contrast, the W-2s show that sponsorship rates are much higher and flatter across age groups, with a consistent rate of approximately 75 percent. There is more agreement between the two sources when it comes to participation rates. They rise from 35 percent to 48 percent in the CPS ASEC and 32 percent to 44 percent in the W-2s.

Sponsorship rates do vary in both data sources by educational attainment. They range from 26 percent for those with less than a high school degree to 64 percent for those with a college degree or more in the CPS. In the W-2s the corresponding range is from 55 percent to 82 percent. Once again, the participation rates more closely correspond between the two data sources ranging from 17 percent to 56 percent in the CPS and from 16 percent to 53 percent in the W-2s.

Retirement plan patterns by race are also noteworthy. In particular, the CPS suggests sponsorship rates are the lowest for blacks at 48 percent while the W-2s suggest they are actually the highest at 79 percent. In terms of participation rates, black participation is lower than non-Hispanic white participation in both the CPS and the W-2s. Hispanics of any race have the lowest participation rate at 25 percent and also somewhat lower sponsorship rates at 64 percent.

Results by firm size show that survey respondents at both the smallest firms and largest firms underestimate firm sponsorship by roughly 20 percent.²⁰ Because smaller firms are less likely to offer retirement plans, sponsorship underreporting is larger in proportional terms for the smallest firms. Participation rates are approximately three to five percentage points lower in the W-2s than in the CPS regardless of firm size.

For approximately one quarter of the CPS sample, union coverage status can be determined.²¹ As is the case for the full sample of private sector wage and salary workers, sponsorship rates are underestimated regardless of union status. However, discrepancies in participation rates suggest the CPS does a better job in measuring retirement plan participation for union workers than the W-2. Specifically, for union workers, the participation rate is 66 percent using the CPS but only 43 percent in the W-2; the analogous numbers for non-union workers are 43 percent and 42 percent, respectively. The remaining private sector prevalence of DB plans for union workers explains why we cannot reliably measure their retirement plan participation in the W-2s alone, given that only DC contributions are recorded in those records. Given that private sector unionization rates are now below seven percent, the understatement of overall participation rates due to DB pensions is likely limited.

We have so far compared survey and administrative record estimates for a single calendar year. By linking several years of CPS and W-2s records, we can also examine how the two data sources compare over time. Figure 2 (A) shows that between 2005 and 2012, sponsorship rates remain roughly steady in the W-2s while they actually show a decline of nearly 5 percentage points in the CPS. In terms of participation, Figure 2 (B) shows that participation rates have trended upward in the W-2s from 36.9 percent to 39.3 percent while they have declined from 46.3 percent to 43.5 percent in the CPS. Figure 2 (C) shows similar patterns for take-up rates, although these changes are smaller than for coverage and participation rates. Because participation rates for CPS include both DB and DC plans, and for

²⁰ The CPS ASEC asks individuals to report the total size of their employer across all locations for their longest job held in the previous calendar year.

²¹ Those households which are part of the “outgoing rotations” are asked additional questions after the basic CPS interview including whether or not a worker is a union member or covered by a union contract.

W-2s it is only DC plans, it could be that DB participation (and coverage) is decreasing even more than DC is increasing. We therefore cannot conclude that errors are increasing over time.

In short, the above analysis has shown that the W-2s have many advantages in measuring retirement plan sponsorship rates over surveys. When it comes to participation, however, the results are more mixed. The point-in-time estimates are slightly lower in the W-2s than the CPS ASEC in 2012 (with the exception of union and public sector workers) but the trends are moving in opposite directions.

5. Individual coverage and participation

We can also explore coverage and take-up across demographic groups using American Community Survey (ACS) data linked to W-2 records.²² We use the employer sponsorship and individual participation measures derived from W-2 records, and information on educational attainment and race and ethnicity from the ACS. ACS data are matched to W-2 records at the person-level using PIKs.

Data from ACS also allows us to better measure coverage among the population of full-time employees who should be covered by ERISA non-discrimination rules. The analysis sample includes 2012 ACS respondents with valid PIKs who satisfy the following sample restrictions: (i) have at least 1 W-2 record with strictly positive earnings in 2012, and have aggregate earnings under 250,000²³; (ii) ages 25 through 64; (iii) report working 27 or more weeks the previous year, and worked an average of 20 or more hours per week; and, (iv) have a main job in the private sector.²⁴

²² For more information about the ACS sample design and other topics, visit <www.census.gov/acs>. For more information on data accuracy and sampling error, please see <<https://www.census.gov/programs-surveys/acs/technical-documentation/code-lists.html>>.

²³ We also removed cases with over 5 W-2 records from 2012 because it is difficult to identify a main employer; these could be contingent/leased employees who are not protected under ERISA non-discrimination rules.

²⁴ We identify a “main job” using the W-2 records only, and determine whether it is private or public-sector using information from the BR. We restrict firms using the same criteria we used to analyze W-2 and Form 5500 coverage rates.

Table 10 presents coverage, participation, take-up and contribution rates for our ACS sample of over 1.3 million tenured full-time private-sector workers who are eligible to participate in DC plans offered by their main employer. Among this sample of ACS respondents, 75.4 percent were covered by a DC plan at their main employer and 43.4 percent participated in the plan, for a take-up rate of 57.7 percent (43.4/75.4). Among those who contributed to these plans, employee contributions were an average of 6.9 percent of earnings (at the main job). Within our sample of ACS respondents, coverage and participation rates differ across educational attainment and race/ethnicity.

5.1 Heterogeneity across worker characteristics

Differences by race and educational attainment could stem from differences in the earnings distribution across groups, since coverage and participation vary by income (Table 3). We now explore differences across education and race after holding income constant. We measure race using five categories: (i) White, non-Hispanic. (ii) Black (Hispanic and non-Hispanic); (iii) Asian (Hispanic and Non-Hispanic); (iv) Hispanic (not Black or Asian); (v) Other (which includes ACS categories for Alaskan and American Native, NH/OPI, and Other). Educational attainment refers to self-reported highest degree attained at the time of the survey: (i) less than a high school diploma; (ii) high school diploma or GED; (iii) some college; (iv) four-year college graduate; (v) graduate degree.

For illustrative purposes, we present graphical analyses. ACS respondents are first placed into deciles of income, using the sum of total earnings across all jobs in the W-2 records.²⁵ We plot estimates of coverage, participation, take-up and contribution rates across income deciles separately by race and education.²⁶ The figures illustrate within and across-income differences by race and education. While the sample sizes are quite large (hundreds to thousands for every sub-sample), the differences across demographic groups are for illustrative

²⁵ The mean income for the two groups are not necessarily equal, as is apparent for the top bin in some of the figures.

²⁶ We focus on race and education because they are demographic/socioeconomic variables that are not available in administrative records and are important variables that the Census Bureau collects data on.

purposes only and have not undergone formal statistical testing. For transparency, we use unweighted data. Other analysts may disagree with our assessment of the visual evidence.

Figures 3 through 6 show differences in our sample by educational attainment, starting with overall participation rates and then exploring differences in coverage, take-up and average contributions. Figure 3 shows that for every group, participation rates increase across income deciles. The difference between participation rates by educational attainment appear larger at high income deciles relative to lower income deciles. Turning to offer rates, Figure 4 shows workers without a HS diploma are less likely to work at firms that offer DC plans than are workers with a HS diploma, across the income distribution. Also, for all education levels, lower income workers are less likely to be at firms offering DC than are higher income workers.

Next, we look at take-up, which is participation conditional on being offered a plan. Figure 5 shows that for the lowest deciles of income, take-up is low regardless of education. At higher income deciles, take-up rates diverge by education. However, take-up rates are higher for college graduates than those with graduate degrees, particularly at the middle income deciles. This could reflect the fact that we do not observe Roth contributions and therefore we underestimate takeup among groups with Roth contributions (and no before-tax contributions). Taxpayers with temporarily low income have incentive to contribute after-tax rather than before-tax income, and this could be the case for graduate degree holders in the middle deciles rather than the top deciles of income.

Figure 6 shows the average share of earnings contributed to a plan, conditional on contributing. Workers are stratified by total earnings at all jobs, whereas contribution rates are calculated using deferred compensation and total earnings at the main job. Among workers with tax-deferred contributions, the contribution level is higher for college and graduate degree holders, across income deciles. The largest differences in contribution rates are at the lowest income deciles.

Next we turn to within-income bin differences by race, presented in Figures 7 through 10. Looking first at participation rates (Figure 7), the trajectory of participation rates across income is similar across race. The patterns for offer rates (Figure 8) are surprising. Black

workers are more likely to be offered DC plans, across the income distribution. At low income deciles, Asian workers are less likely to be offered plans, but then offer rates for Asians are indistinguishable from other groups at higher income deciles. For all races, lower income workers are less likely to be at firms offering DC than are higher income workers.

Figure 9 shows that take-up rates are low for all groups in the bottom income deciles, and all groups there is increasing take-up across income deciles. Across income deciles there is higher take-up among whites and Asians. Among workers with tax-deferred contributions, Figure 10 shows the contribution level is higher for Asian and white (non-Hispanic) workers, across income deciles. Largest differences across race/ethnicity are in the lowest income deciles.

These large differences in offer rates by race could be influenced by Black workers on average being employed at larger firms. In Figure 11, we plot offer rates again, this time controlling for firm size. The residualized incomes are binned and plotted. The bins are NOT necessarily the same as in the Figure above, so the exact levels are not directly comparable. Nevertheless, the higher offer rates for Black workers disappear after controlling for firm size, as do the lower offer rates for Asians (in low income deciles). These changes when controlling for firm size stem from differences in coverage across firm size, as illustrated earlier, and the composition of the firms employing workers at different income levels and race groups.

6. Conclusion

In this paper, we present estimates of DC plan sponsorship and participation using the universe of W-2 records. To our knowledge, this is the first time tax data have been used for this purpose. Our main contribution is developing new measures of DC plan sponsorship that generate better estimates of DC coverage and participation.

Our estimates of DC plan coverage and take-up diverge from estimates using other data. Using W-2 records, we estimate firm sponsorship rates that are smaller than has been found using employer surveys (NCS, 2012). At the same time, the jobs and individual level coverage rates are higher than has been found elsewhere (Dushi et al., 2011). We show that individuals

in the CPS underreport retirement plan coverage rates, which leads to inflated take-up rate estimates. These results have important implications for understanding take-up and heterogeneity across demographic and socioeconomic groups.

As we have shown, employer-employee linked data provide important information needed to better understand sponsorship, participation and the potential impact of policies incentivizing firm sponsorship. Estimates of nationwide pension coverage vary substantially depending on the source of data, particularly whether the unit of analysis is the worker or the firm. Our estimates of DC sponsorship among small firms diverge from the National Compensation Survey (NCS) estimates, highlighting potential strengths of using the universe of firms or plans rather than a nationally representative firm-level survey. With small firms at the heart of policy discussions, additional work investigating these differences is critical to producing better estimates of the potential effects of policy changes.

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Tables

Table 1: Population counts and DC plan coverage in W-2 records (2012)

Firms (EINs)		
Number in W-2 records		6.2M
Percent of EINs offering DC plans		13.7
Jobs		
Number in W-2 records		218.9M
Percent of jobs at EIN with DC		71.2
Take-up among jobs at EINs with DC		33.6
Individuals		
Number in W-2 records		154.8M
Percent of workers at EINs with DC		78.5
Take-up among workers at EINs with DC		41.4
Individuals with over \$3,770 total earnings		
Number in W-2 records		135.1M
Percent of workers at EINs with DC		80.8
Take-up among workers at EINs with DC		45.7

NOTE: A job is at an EIN that sponsors a DC plan if there are deferred earnings from at least one job at the EIN. A worker is offered a plan if employed at any firm offering DC plans and participates if they have deferred compensation at any of their jobs.

SOURCE: U.S. Census Bureau, TY 2012 Form W-2

Table 2: DC Coverage and participation, by firm size (2012 W-2s)

EIN size (number of employees)	Panel A: EINs-level			Panel B: Jobs level	
	Percent of EINs	Offered	Average take-up	Percent of jobs	Coverage
1	23.61	3.4	100.0	0.67	3.4
2 – 9	46.91	7.3	55.2	5.72	8.9
10 – 24	16.04	20.2	41.1	6.89	21.1
25 – 49	6.45	32.6	36.9	6.32	33.3
50 – 99	3.48	46.5	33.6	6.82	47.4
100 – 499	2.84	68.5	32.5	16.13	72.1
500-1,000	0.35	83.5	34.7	6.82	83.8
1,000-10,000	0.3	88.4	35.1	21.23	89.7
10,000+	0.03	92.9	32.3	29.4	93.5
Total Count	6.2M	13.7	45.1	218.9M	71.2

NOTE: Firms are grouped by the number of employees, which is determined from the number of unique PIKs in the W2 records associated with the EIN in 2012.

SOURCE: U.S. Census Bureau, TY 2012 Form W-2

Table 3: Jobs-level coverage and participation across earnings

Earnings categories	At firm offering DC plan (percent)	Participating in DC plan (percent)	Take-up rate (percent)
\$1-10k	63.6	5.6	8.8
\$10-20k	65.1	15.9	24.4
\$20-30k	75.2	31.0	41.2
\$30-50k	82.8	45.1	54.5
\$50-75k	89.3	59.3	66.4
\$75-100k	92.0	69.4	75.4
\$100-150k	92.7	76.4	82.4
\$150-200k	91.9	78.2	85.1
\$200-300k	90.4	77.2	85.4
\$300-500k	90.8	76.9	84.7
\$500k+	91.2	75.3	82.5

NOTE: These numbers are based on job-level annual earnings from the population of W-2 records in 2012. Jobs are placed into earnings categories. Individuals may therefore show up more than once, but for different firms.

SOURCE: U.S. Census Bureau, TY 2012 Form W-2

Table 4: Percent of EINs with DC plans for untenured employees, by firm size

EIN size (number of employees)	All Employees	1st-Year Employees
Total	27.8	9.3
Fewer than 10	8.2	1.1
10 – 24	20.0	3.2
25-49	34.4	8.5
50-99	49.4	17.6
100 or more	74.2	45.2

NOTE: The sample is restricted to EINs that exist for 2010, 2011 and 2012, with at least one first-year employee (in 2012 only) and at least one who was not.

SOURCE: U.S. Census Bureau, TY 2012 Form W-2

Table 5: Heterogeneity in DC Plan Sponsorship and Participation Rates across EINs (in 2012)

	Percent of firms offering DC plans	Avg Participation Rate across firms offering plans
Panel A: Type of firm		
Sole Proprietors	3.3	47.7
S-Corporation	12.7	48.8
Partnership	14.2	41.3
C-Corporation	19.2	48.8
Tax-exempt	19.4	46.1
Non-profit	28.3	30.8
State/Local Gov't	51.1	29.3
Panel B: By NAICS sector		
Agr, Forest, Fish	3.0	41.0
Accommodation & Food	3.6	13.0
Retail Trade	8.3	34.7
Construction	9.5	36.8
Real Estate	9.8	51.6
Arts, Entertainment	10.5	32.0
Transportation	10.7	40.1
Administration	10.9	41.1
Other Services	11.5	34.7
Professional	18.4	59.3
Mining	19.4	55.8
Finance & Insurance	20.5	61.2
Wholesale Trade	20.7	52.0
Health Care	23.1	43.5
Information	24.1	51.7
Manufacturing	26.5	46.9
Education Services	30.6	26.6
Utilities	36.7	61.1
Management	39.3	62.1
Public Admin	40.4	32.9

NOTE: Firms are grouped by the number of employees, which is determined from the number of unique PIKs in the W2 records associated with the EIN in 2012. Categories for non-profit, federal govt, state/local government are determined by the Employer Code, while categorizations for the detailed categories are from Legal Form of Organization (LFO). EINs associated with the federal government have been removed, according to Census policy. For the NAICS sector, the category for "other" is not reported due to small cell size. The average participation is at firms that offer plans.

SOURCE: U.S. Census Bureau, EIN-linked TY 2012 Form W-2 and 2012 Business Register

Table 6: Pension coverage using W-2 and Form 5500 (2012)

	Using EIN-level measures		Using Firm-level measures	
	EINs	Jobs	EINs	Jobs
None	84.4	31.6	84.2	30.1
DC (W2)	6.5	30.2	5.5	11.4
DC (5500)	1.6	1.5	1.6	1.5
DC (W2, 5500)	7.0	28.5	7.8	38.1
DB (5500)	0.1	0.1	0.1	0.1
DC (W2); DB (5500)	0.0	0.7	0.0	0.2
DC (5500); DB (5500)	0.1	0.1	0.1	0.1
DC(W2,5500); DB (5500)	0.3	7.4	0.7	18.5
TOTAL OBS	5.9M	182.5M	5.9M	182.5M

NOTES: Public sector jobs are excluded from the sample because they are exempt from Form 5500 filing requirements. SOURCE: U.S. Census Bureau, EIN-linked TY 2012 Form W-2 and 2012 Form 5500 Research File

Table 7: Autoenrollment in DC plans coverage (2012)

DC coverage categorization (percent)	Using EIN-level measures		Using Firm-level measures	
	EINs	Jobs	EINs	Jobs
DC coverage-autoenrollment	0.4	6.3	0.7	13.4
DC coverage-no autoenrollment	6.9	29.5	7.6	41.8
DC coverage-unknown autoenrollment	6.5	30.9	5.5	11.5
No DC coverage	86.2	33.2	86.2	33.2
Total count	5.9M	182.5M	5.9M	182.5M

NOTE: Public sector jobs are excluded from the sample because they are exempt from Form 5500 filing requirements. We use Form 5500 information associated with the EIN. If there are no active DC plans associated with the EIN, we append information on the active DC plans associated with other EINs associated with the same firm.

SOURCE: U.S. Census Bureau, EIN-linked TY 2012 Form W-2 and 2012 Form 5500 Research File

Table 8: Agreement of 2013 CPS-ASEC and W-2 Retirement Plan Information for Private Sector Workers Age 25-64

	Coverage			Participation		
	All	Non-Imputed	Imputed	All	Non-Imputed	Imputed
W-2: yes; CPS: yes	0.469	0.481	0.42	0.277	0.297	0.195
W-2: yes; CPS: no	0.277	0.27	0.306	0.116	0.105	0.158
W-2: no; CPS: yes	0.057	0.042	0.118	0.158	0.137	0.248
W-2: no; CPS: no	0.196	0.206	0.156	0.449	0.461	0.399

SOURCE: U.S. Census Bureau, PIK-linked 2013 CPS ASEC person records and TY 2012 Form W-2

Table 9: Comparison of 2013 CPS-ASEC and W-2 Retirement Plan Information for Wage and Salary Workers Age 25-64 by Demographic Group

	Offer Rate		Participation Rate		Take-Up Rate	
	CPS	W-2	CPS	W-2	CPS	W-2
Public Sector	0.81	0.94	0.74	0.43	0.91	0.46
Private Sector	0.53	0.75	0.44	0.39	0.83	0.53
Private Subgroups						
Age 25 to 34	0.47	0.75	0.35	0.32	0.74	0.43
Age 35 to 44	0.53	0.74	0.45	0.41	0.84	0.55
Age 45 to 54	0.56	0.75	0.49	0.43	0.87	0.57
Age 55 to 64	0.56	0.75	0.48	0.44	0.86	0.58
< HS Grad	0.26	0.55	0.17	0.16	0.67	0.29
HS Grad	0.46	0.70	0.36	0.31	0.79	0.45
Some College	0.54	0.76	0.44	0.39	0.81	0.51
College Grad	0.64	0.82	0.56	0.53	0.88	0.64
White	0.54	0.74	0.45	0.40	0.84	0.54
White Non-Hispanic	0.58	0.77	0.49	0.43	0.84	0.57
Black	0.48	0.79	0.37	0.34	0.76	0.43
Asian	0.50	0.70	0.43	0.41	0.86	0.59
Hispanic Any Race	0.35	0.64	0.27	0.25	0.77	0.40
Full-time Full-Year	0.59	0.79	0.52	0.47	0.87	0.60
Not Full-time Full-Year	0.35	0.64	0.21	0.19	0.62	0.30
Firm Size 1-10	0.18	0.36	0.15	0.12	0.79	0.35
Firm size 10-24	0.34	0.59	0.27	0.24	0.80	0.42
Firm Size 25-99	0.48	0.74	0.39	0.33	0.82	0.45
Firm Size 100-499	0.58	0.84	0.48	0.43	0.82	0.51
Firm Size 500-999	0.63	0.89	0.53	0.48	0.84	0.54
Firm Size 1000+	0.71	0.90	0.59	0.54	0.84	0.60
Union	0.74	0.90	0.66	0.43	0.90	0.47
Not Union	0.52	0.75	0.43	0.42	0.82	0.56

SOURCE: U.S. Census Bureau, PIK-linked 2013 CPS ASEC person records and TY 2012 Form W-2

Table 10: Individual coverage and participation by ACS demographic characteristics

	Share of sample	Coverage	Participation	Take- up	Contribution rate
All		75.4	43.4	57.7	6.9
Education					
No HS diploma	6.8	61.4	22.9	37.3	5.2
HS diploma/GED	26.3	71.5	36.6	51.2	5.9
Some college	33.4	75.5	42.7	56.6	6.3
College graduate	22.4	80.5	53.4	66.3	7.6
Graduate degree	11.1	82.3	54.3	66.0	8.7
Race/ethnicity					
White, non-					
hispanic	75.1	75.6	45.6	60.4	7.0
Black	8.4	80.8	36.7	45.5	5.1
Asian	5.4	74.1	46.6	62.9	8.9
Hispanic	9.8	70.2	32.1	45.6	5.5
Other	1.2	71.5	32.9	46.1	5.9

NOTE: There are roughly 1,320,000 observations from ACS 2012. The share of population is the unweighted count over the total number of observations.

SOURCE: U.S. Census Bureau, PIK-linked 2012 ACS person records and TY 2012 Form W-2

Table 11: Comparing estimates to previous work

Panel A: Firms' offer rates using W-2s and NCS (in percent)

	All firms	1 - 99 employees	100+ employees
W-2s	14	12*	72*
W-2s – restricted**	28		74
NCS (2012)	43	42	74

Panel B: Workers offer and participation rates

	Offered	Participation
W-2s: job-level	71	24
W-2s: PIK-level^	79	32
W-2s: PIK-level, restricted^^	81	37
NCS (2012)	55	37
SIPP (2006)	57	39

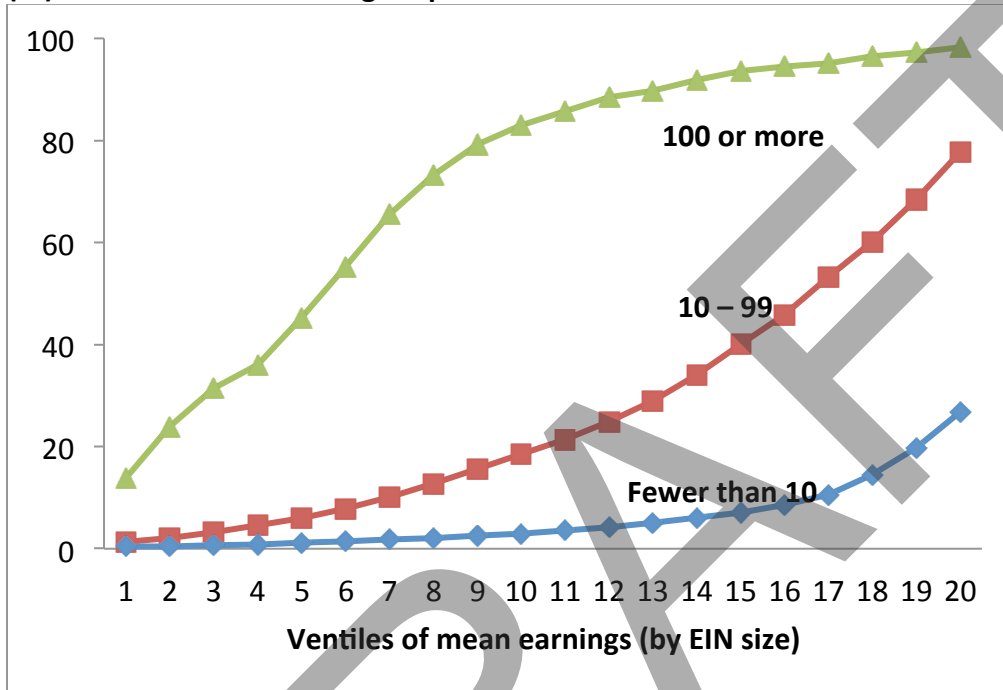
SOURCE: SIPP (2006) from Dushi et al. (2011), Table 2: SIPP respondents age 21-64 with main job or business in 2006. National Compensation Survey (NCS), 2012: all workers.

^worker is offered a plan if employed at any firm offering DC; participates if DC contribution at any job . ** Restricted to firms in 2010-2012 with at least one tenured and one 1st-year employee. ^^ Excludes workers with <\$3,770 total earnings.

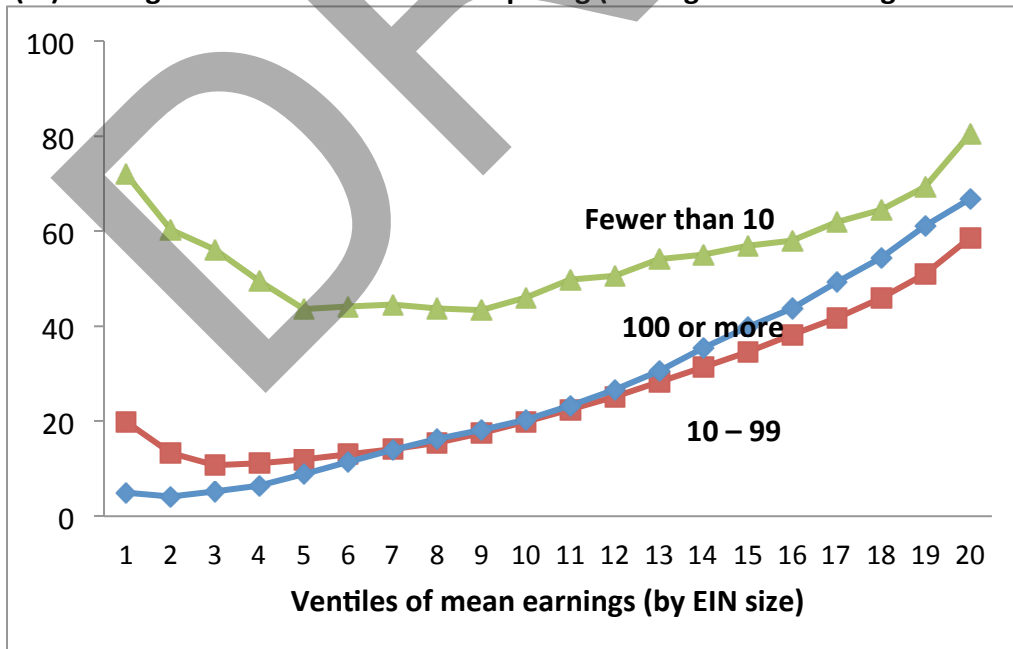
Figures

Figure 1: Firm sponsorship and participation rates: By Firm Size & Ventiles of Mean Earnings (by EIN Size)

(A.) Percent of EINs offering DC plans

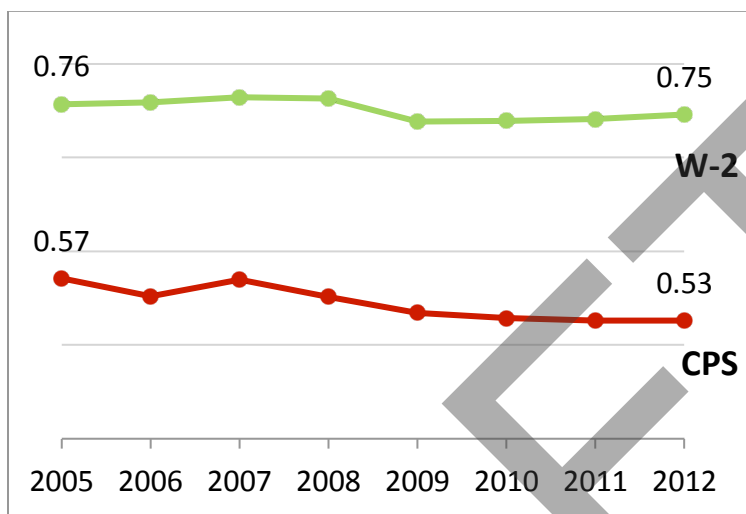


(B.) Average Share of Workers Participating (among Firms Offering DC Plans):

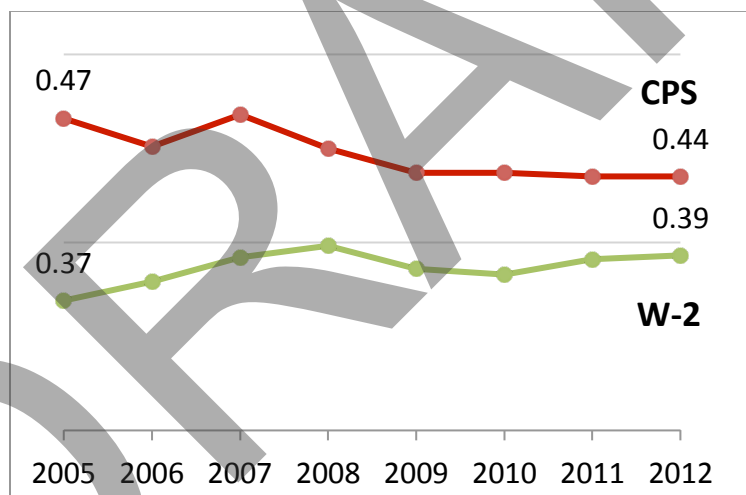


SOURCE: U.S. Census Bureau, TY 2012 Form W-2

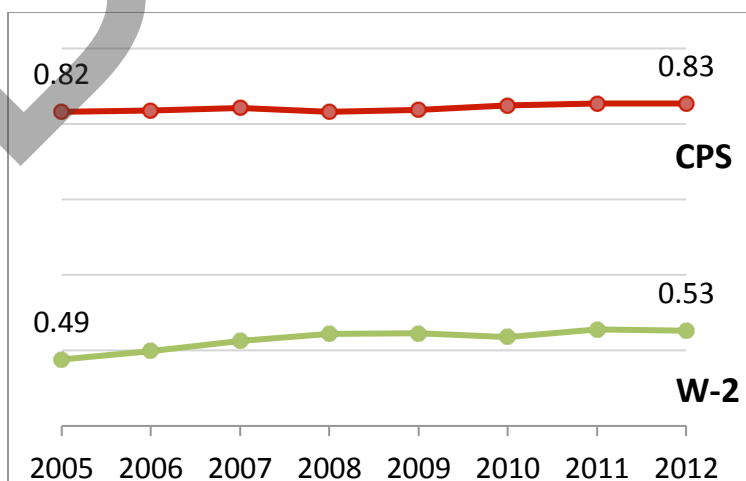
Figure 2: CPS-ASEC and W-2 Pension Plan Information Over Time
(A.) Coverage



(B.) Participation



(C.) Take-Up



NOTE: Sample restricted to private sector workers age 25-64

SOURCE: U.S. Census Bureau, PIK-linked 2013 CPS ASEC person records and TY 2012 Form W-2

Figure 3: Participation rates across earnings and education

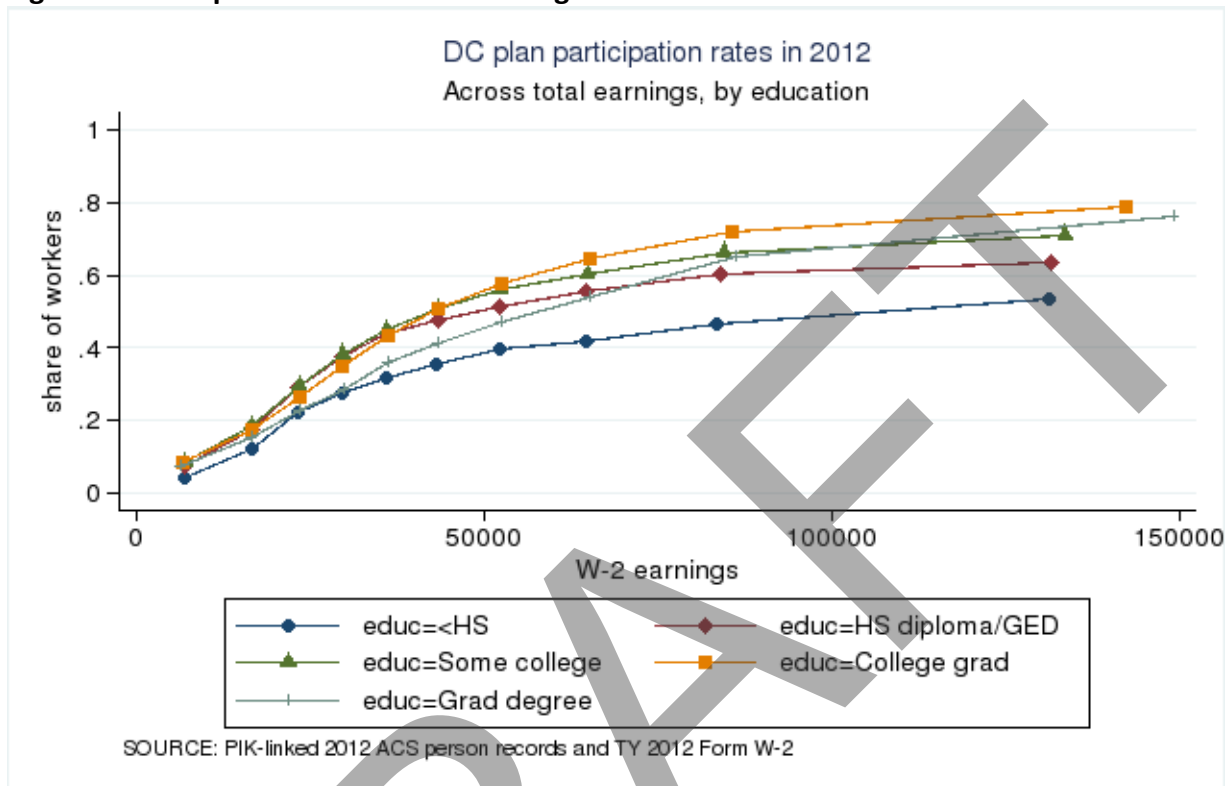


Figure 4: Coverage rates across earnings and education

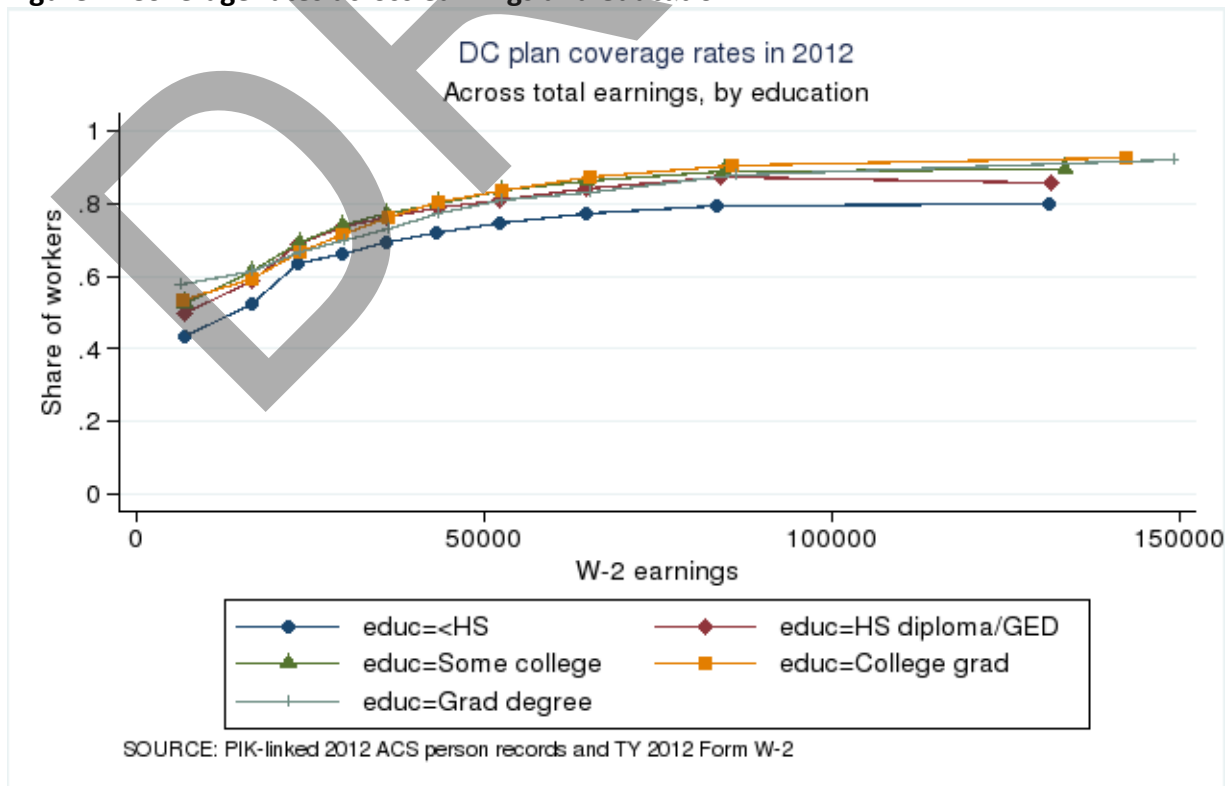


Figure 5: Takeup rates across earnings and education

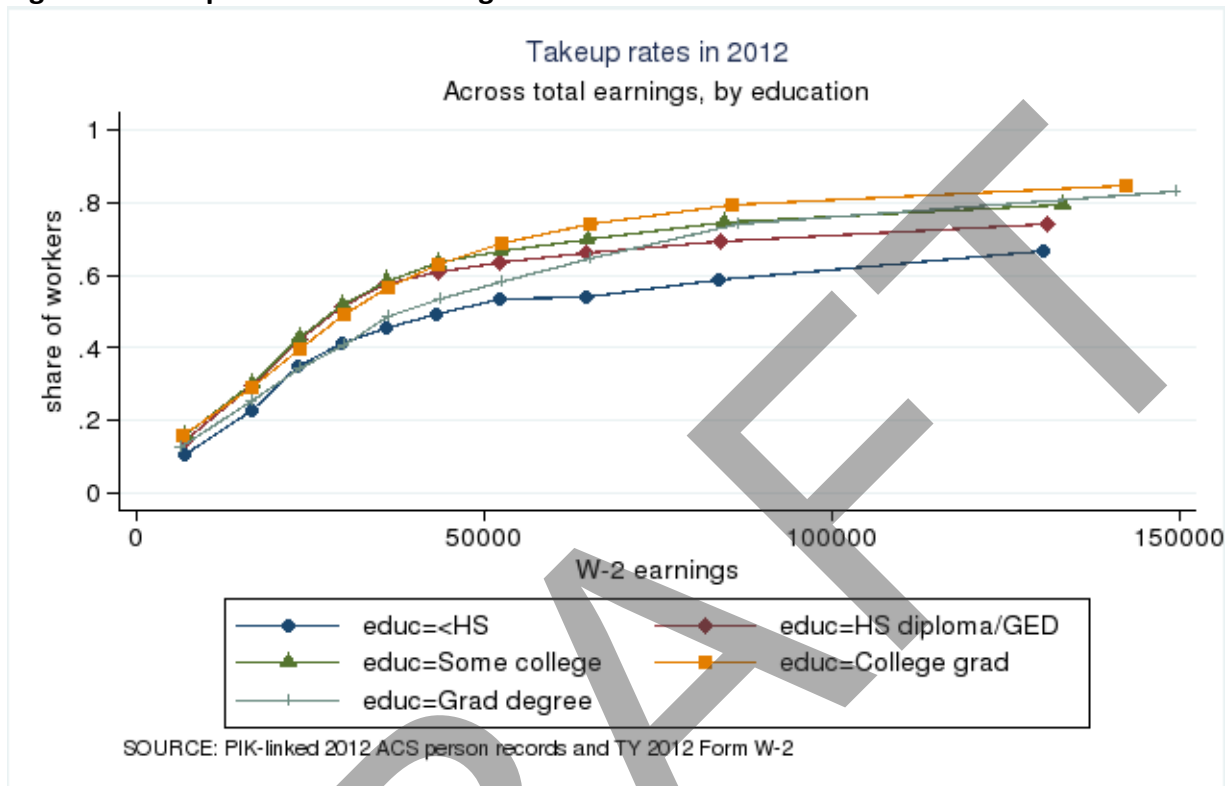


Figure 6: Average contribution among participants by earnings and education

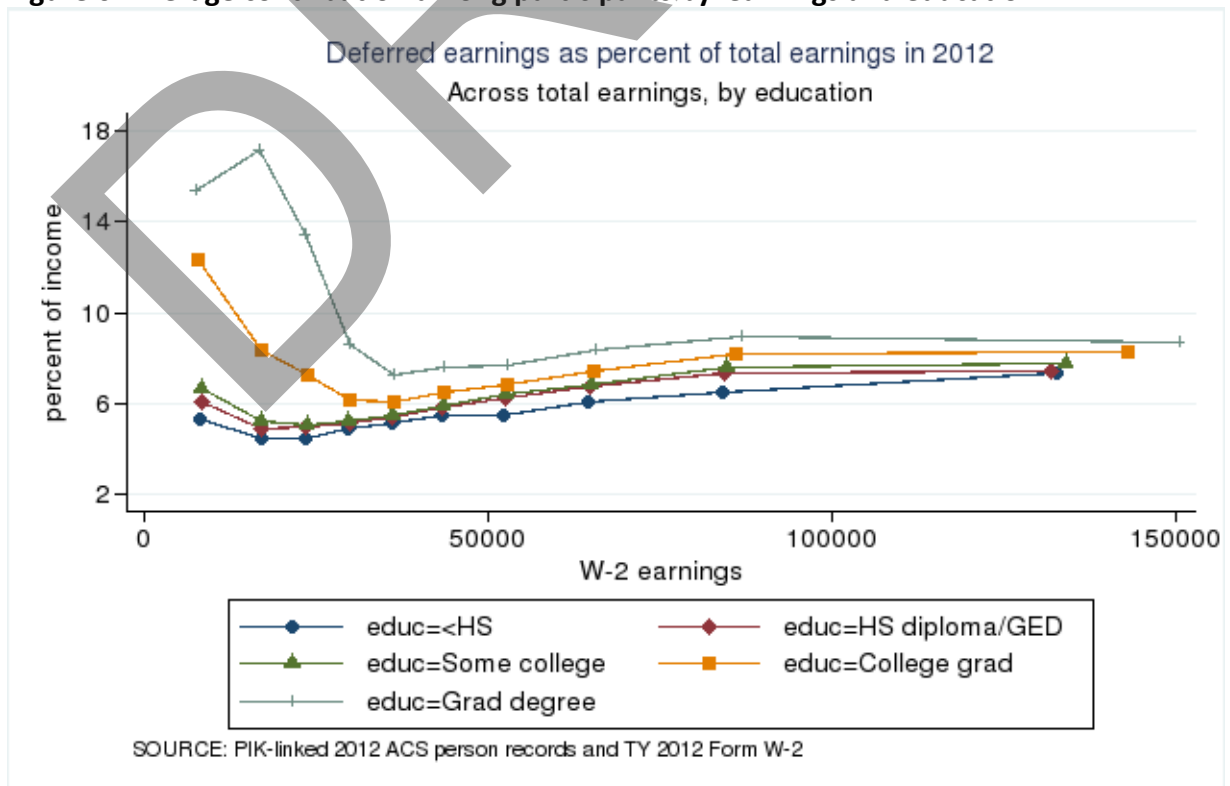


Figure 7: Participation rates across earnings and race

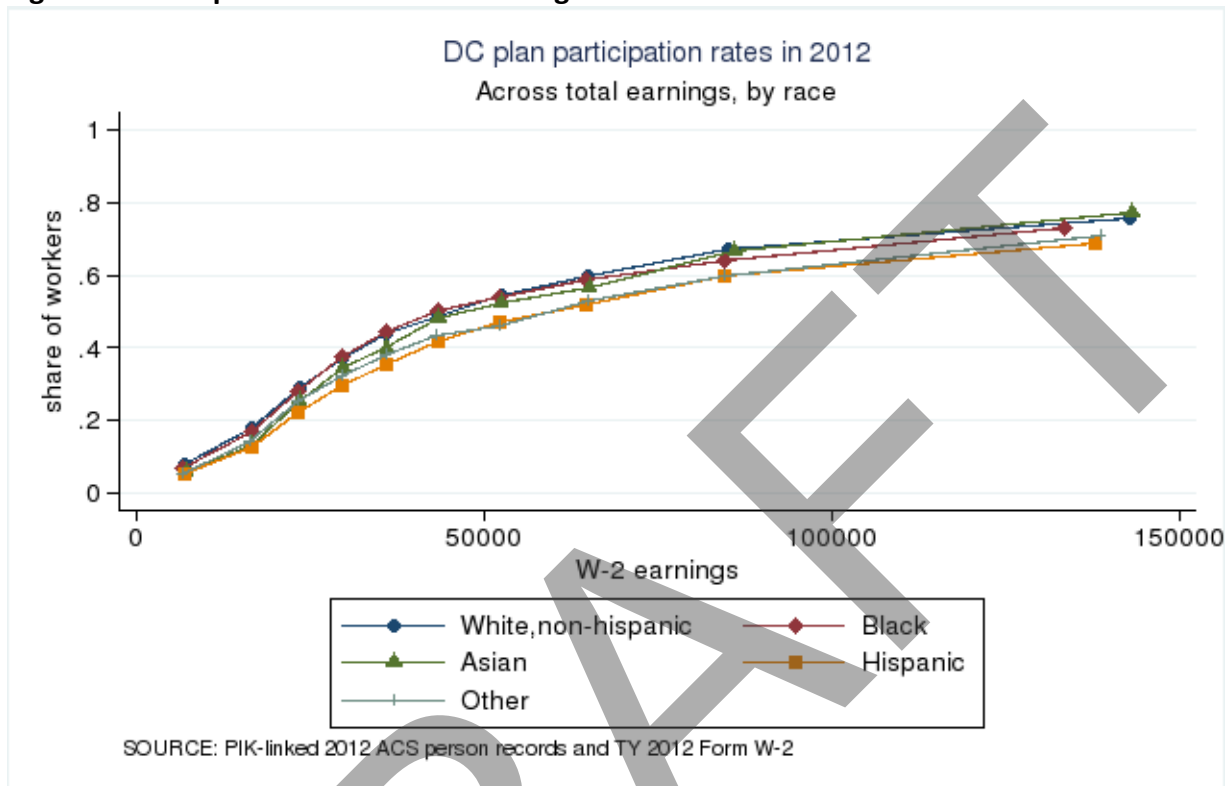


Figure 8: Coverage rates across earnings and race

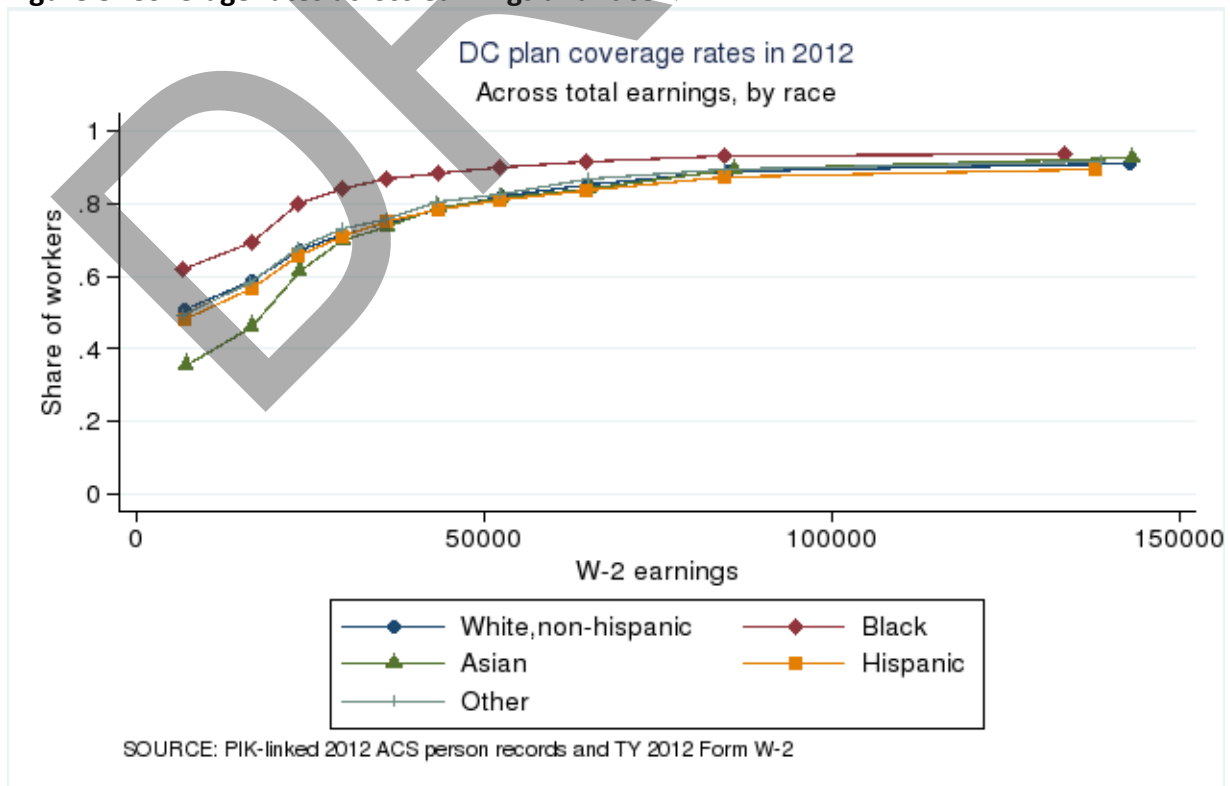


Figure 9: Takeup rates across earnings and education

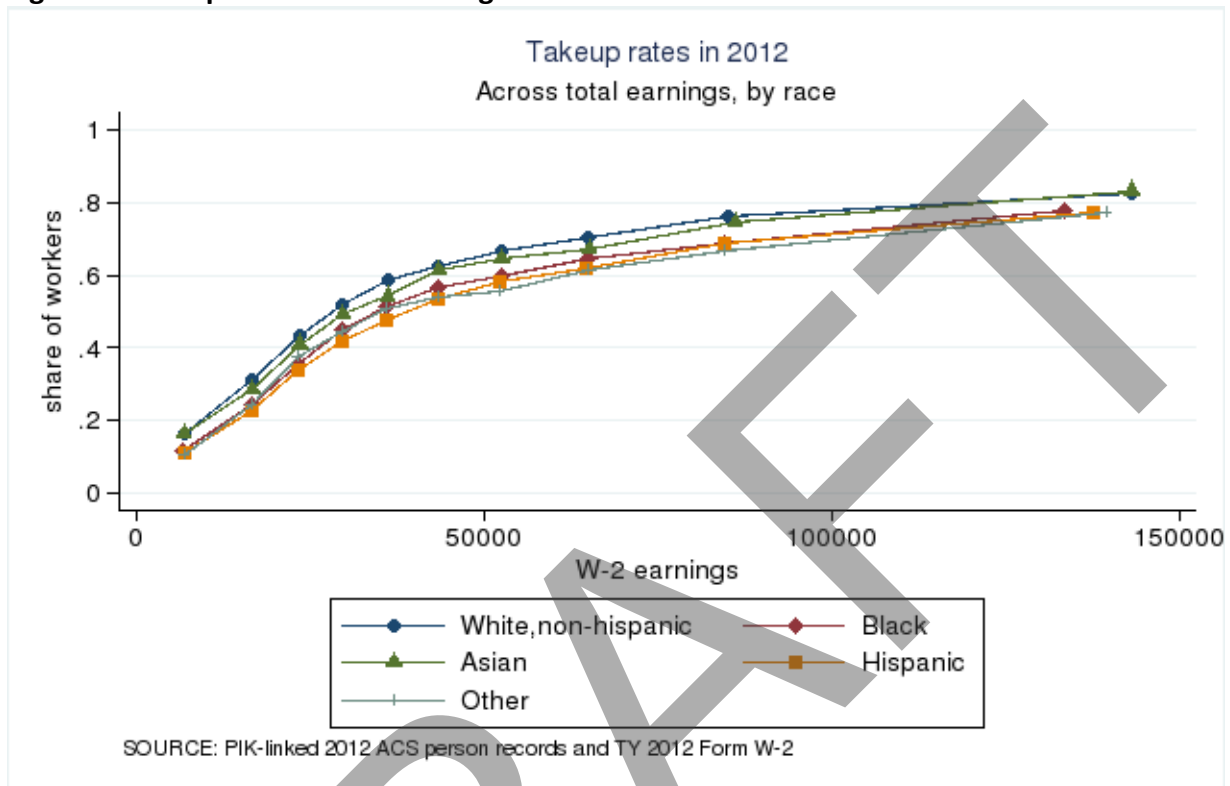


Figure 10: Average contribution among participants by earnings and race

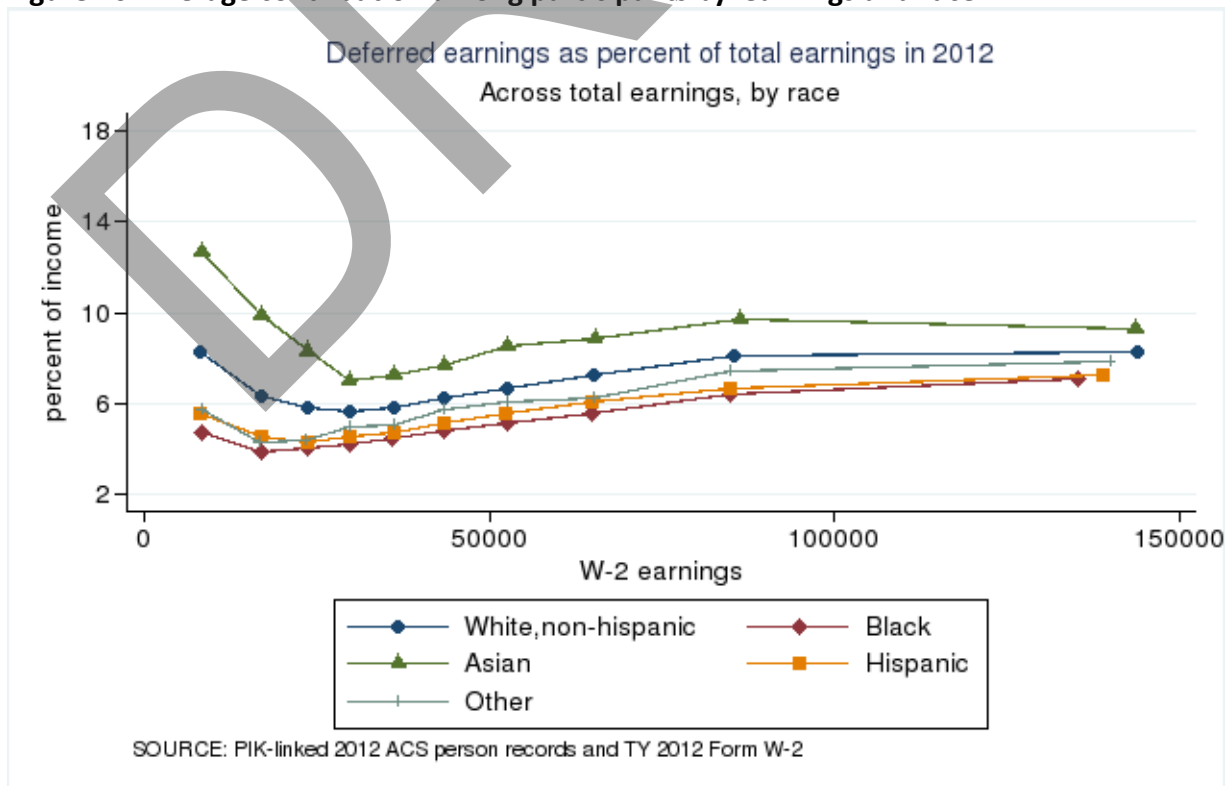


Figure 11: Coverage rates across earnings and race, conditional on firm size

